CASE SERIES

Necrotizing soft tissue infections of the perineum: A Mini Case Series and Review of the Literature.

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ABSTRACT

Necrotizing infections of the perineum, commonly known as Fournier's gangrene, represent a rapidly progressing and life-threatening condition requiring prompt diagnosis and intervention. We present three interesting cases of perineal necrotizing infections managed successfully through aggressive surgical debridement combined with broad-spectrum antimicrobial therapy and Vacuum assisted closure. The importance of early recognition and urgent surgical intervention is emphasized to halt disease progression, prevent systemic sepsis, and improve survival outcomes. Our cases highlight the critical role of extensive debridement to remove all necrotic tissue, followed by appropriate wound care. Early and decisive surgical management continues to be the most critical determinant of patient outcomes in perineal necrotizing infections, underscoring its significance in reducing morbidity and mortality associated with this aggressive pathology.

Keywords: Necrotizing infections, Perineum, Fournier's gangrene, Surgical debridement

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INTRODUCTION

Necrotizing infections of the perineum, commonly known as Fournier's gangrene, represent a rapidly progressing and life-threatening condition that requires prompt recognition and aggressive management.

Necrotizing soft tissue infections (NSTIs) can be described by their anatomic location (i.e., Fournier's gangrene, Meleney's gangrene), the depth of infection (ie, cellulitis, fasciitis, myositis) or based on their microbiology [1]. According to their causative microbial organisms, NSTIs are categorized in Type I (polymicrobial etiology), Type II (monobacterial, often Group A-Streptococcus or Staphylococcus), Type III (Clostridium species, Gram-negative bacteria/ marine-related bacteria like Vibrios species and Aeromonas hydrophila) or Type IV (Fungal organisms, often trauma associated) [1].

The perineum is typically affected by Type I NSTIs. NSTIs of the perineum, and ano-urogenital region are also called Fournier's gangrene (FG). The European Association of Urology classifies Fournier's gangrene as a type 1 necrotizing fasciitis of the perineal, genital, or perianal region.

FG most often affects men in mid-to-late adulthood, whereas occurrences in women,

children, or newborns are uncommon. The infection usually originates from the urogenital tract, the skin of the region, or the anorectal area, with perirectal abscesses being the most frequently identified source [1,2]. Other causes are genitourinary infections or trauma, or perineal and genital skin injuries, fistula, rectal carcinoma, perforated rectum, bartholin's gland inflammation and prolapsed hemorrhoids reduction [3]. Predisposing factors include, among others, diabetes mellitus (the use of SGLT2 inhibitors is also a risk factor), chronic alcohol abuse, malignancy, immunosuppression, renal insufficiency, obesity and liver cirrhosis [1,4,3].

The most frequently isolated pathogens are Escherichia coli, Klebsiella pneumonia, Staphylococcus aureus and from the anaerobes is Bacteroides fragilis [4]. A synergy between aerobes and anaerobes allows the infection to rapidly spread along fascial planes. Once bacteria invade the tissues, they release toxins and enzymes that cause inflammation and blockage of small blood vessels [4,3]. This vascular occlusion leads to tissue ischemia, creating an environment conducive to the proliferation of facultative and obligate anaerobic bacteria [4]. These bacteria further produce multiple enzymes such as hyaluronidase, lecithinase, streptokinase and collagenase, which degrade fascial barriers. Fascial destruction with a velocity of 2-3 cm/hour has been reported [4]. The infection tends to track along the natural fascial layers of the perineum, genitalia and lower abdomen—such as Colles', Dartos, and Scarpa's fascia—allowing rapid extension across these regions. This dissemination along the fascial planes facilitates the characteristic rapid and extensive spread of the infection, often making early recognition and aggressive treatment crucial.

Various scoring systems have been developed, like Fournier's Gangrene Severity Index -FGSI (9 parameter test assessing vital signs and lab values) Uludag FGSI (FGSI's parameters plus assessing the extension of disease and age of patient), Laboratory Risk Indicator for Necrotizing Fasciitis-LRINEC (scoring of 6 lab values). Non-specific scoring systems like Age-Adjusted Charlson Comorbidity Index (ACCI), Surgical APGAR Score (SAS) and neutrophil-lymphocyte ratio (NLR) are also used to predict the outcome. Scoring systems are not always reliable. LRINEC and NLR appear more valuable for prediction of the length of hospitalization, while FGSI and UFGSI comprised the highest sensitivity and specificity value in predicting mortality prognosis [5].

CASE PRESENTATIONS

Patient 1

A 58-year-old patient with a past medical history of chronic alcohol abuse, obesity, chronic hepatitis B virus (HBV) infection, benign enlargement of prostate, known hemorrhoids and 20 pack-year history of smoking, presented to the emergency department complaining of severe pain and marked swelling in the perineal and rectal region, fever and discharge from the perianal region for 3 days. The patient reported also that, 8 days before admission, he had developed urinary retention and was catheterized with the return of sufficient quantity of urine. The catheter was then removed and the patient was discharged with oral antibiotics. In the urinalysis of that day hemoglobinuria was detected. Urine culture was sterile.

Upon arrival to the emergency departement, the patient was subfebrile (38 ℃ axillary) and tachypnoeic. Laboratory examinations revealed Polymorphonuclear leucocytosis (NEU 86%, WBC 13.900 K/µl), moderate anemia, elevated inflammatory markers, normal platelet count, normal transaminases and unexpected hyperglycaemia.

Local examination revealed edema of the perineum with skin temperature arose, tenderness, rubor, a foul-smelling purulent discharge and a ruptured perianal abscess. There was no palpable crepitus on initial examination.

While in the Emergency Department he was started on i.v. antibiotics (Clindamycin, Tazobactam, Amikacin). An indwelling Foley's catheterization was done, and 1000 mL of urine was drained.

A multi-slice abdomino-pelvic CT scan was performed with reconstructions in 1.5 mm thick slices before and after intravenous contrast medium injection. Fat stranding was recognized with the formation of fluid collections within the gluteal and perineal region. Air coexists which continuously rise perianally to the level of the levator ani muscle.

Since the patient was in a stable condition and able to undergo anesthesia, extensive debridement was performed immediately, under general anesthesia, over a wide area, in the operating room.

Immediate circumferential incision of the anal ring and debridement of all necrotic tissues was performed. After the incision, a large amount of cloudy, foul-smelling, serous fluid was drained. A horseshoe abscess and a perianal fistula at 7 o'clock position were detected. Cleaning of the ischial fossae up to the coccyx, anatomical preparation of the

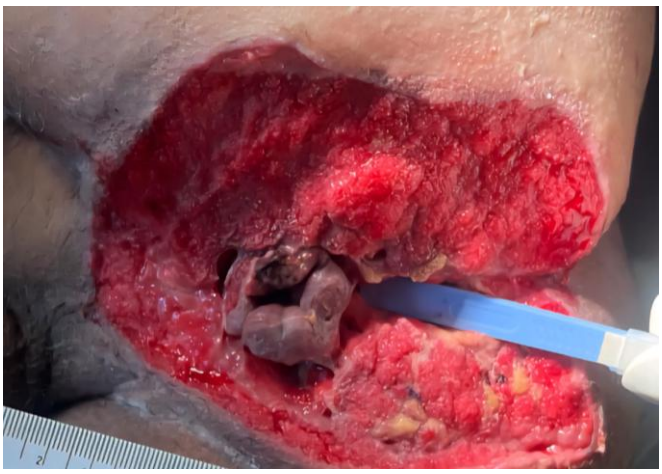

Figure 1. Progression of wound healing in patient #1 - postoperative day 17.

rectum in a circular manner and cleaning it of necrotic tissues was done. The integrity of the rectal wall was checked and it was intact. Scrotum was intact. A large portion of the perineum was resected. Tissue samples were taken during debridement.

A loose Seton was placed in the fistula tract. Three drains were placed in the ischiorectal fossa around the rectum. A protective end sigmoid ostomy was performed to prevent fecal contamination of the wound. The indwelling urinary catheter also remained to avoid wound contamination.

Postoperative systematic i.v. antibiotic treatment with Tazobactam, Daptomycin, Clindamycin and Amikacin (for 5 days to avoid side effects of the drug) was initiated.

Microbiological examination of intraoperatively taken samples reveals a mixed infection with Streptococcus anginosus, Staphylococcus coagulase-negative CoNS and Saccharomyces cerevisiae. Blood cultures and Urine cultures were sterile.

Histopathological examination indicates extensive necrotic-gangrenous lesions of the subcutaneous tissue and diffuse necrotic lesions of the subcutaneous adipose tissue and soft tissues, with accompanying abscess

formation, prominent presence of polymorphonuclear leukocytes, thrombosis of small vessels and hemorrhagic infiltration. No evidence of malignancy was observed.

The patient received a V.A.C.®-dressing on the 2nd postoperative day, after it was confirmed that the disease was no longer progressing. VAC dressings were exchanged twice every week. He, was discharged in good condition, hospital stay was 7 days. Then follow-up outpatient care was conducted (Figure 1).

Patient 2

A 77- year-old patient presented to the emergency department complaining of severe anal pain and subfebrile temperature up to 38 ℃ for seven days. The patient reported a past medical history of arterial hypertension, atrial fibrillation, beginning of dementia and thyroidectomy.

Local examination reveals tenderness, edema and redness of perianal area. A digital rectal exam was negative. Systemic examination was unremarkable. Laboratory examination revealed polymorphonuclear leukocytosis(WBC 31.950 K/µl, NEU 92.5%) and an elevated CRP value (245 mg/L).Tumor markers were negative.

He was started on Meropenem, Clindamycin, Daptomycin.

CT revealed perianal fluid collections with rim enhancement (possible abscess) about 6 cm. A longitudinal incision of a perianal abscess on the left side of the rectum at 2-4 o'clock was performed. Drainage of pus. Lysis of loculations and cauterization of affected tissues. Extension of the incision around the rectum and anatomical preparation of its lower part with concomitant ligation of the internal and external sphincter. Cleaning of the ischial fossae up to the coccyx. Placement of compresses with povidone-iodine and pressure dressing. A prophylactic end sigmoid ostomy was performed.

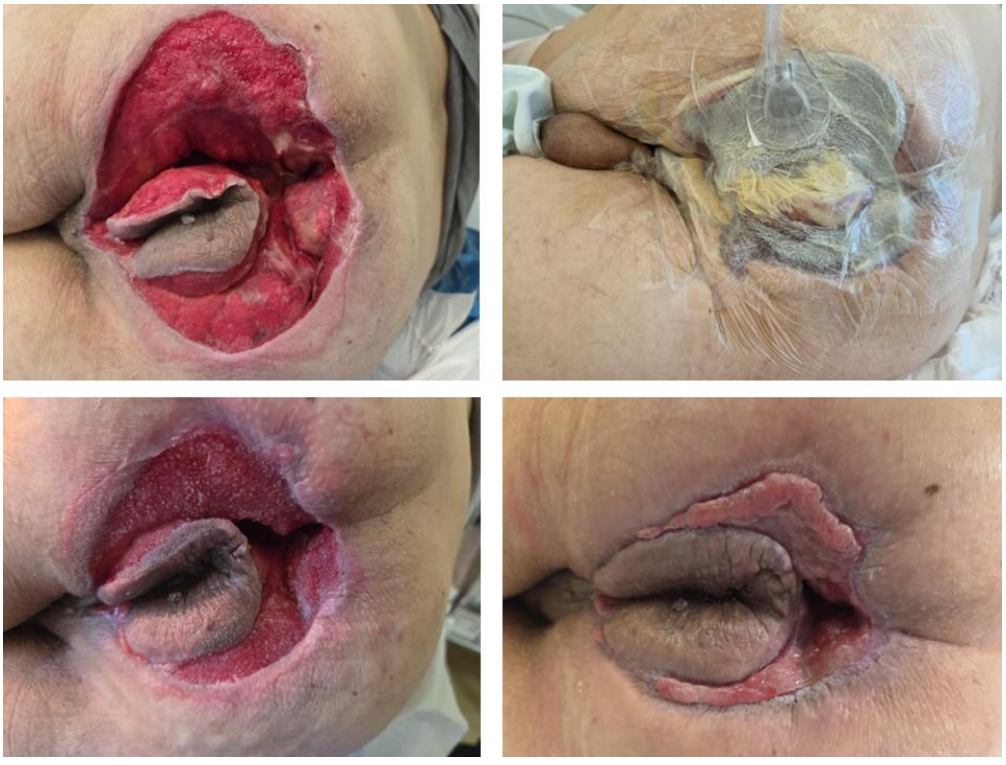

Figure 2. Progression of wound healing in the outpatient setting using VAC therapy. Patient #2.

Histopathological examination revealed segments of skin and subcutaneous connective tissue with extensive ulcerative lesions and the presence of abundant polymorphonuclear aggregates with the formation of abscess cavity. This polymorphonuclear inflammation extends peripherally and into the surrounding striated muscle fibers.

Microbiological examination of the tissue and pus sample showed Escherichia coli, Klebsiella spp. and Prevotella spp.

He received a V.A.C.®- dressing on the 2nd postoperative day, hospital stay was 10 days. Then follow-up outpatient care was conducted (Figure 2).

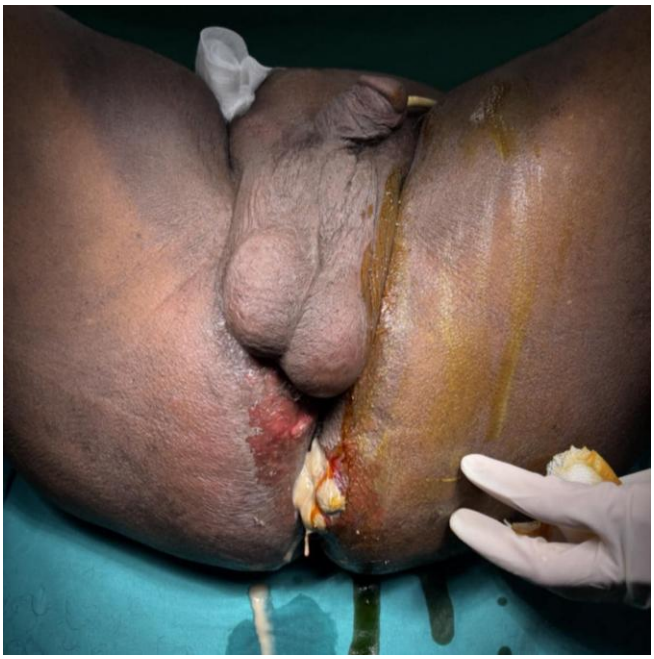

Figure 3. Purulent discharge during clinical examination upon arival of patient #3.

Patient 3

A 46-year-old patient with a past medical history of Type II diabetes mellitus presented to the emergency department complaining of rectal purulent discharge, pain in the area and fever for four days. The patient is a chronic smoker and obese.

Upon arrival to the emergency departement, the patient was febrile (38,2℃ axillary), tachypnoeic and tachycardic. His blood pressure was 110/69 mm Hg. Laboratory examinations revealed Polymorphonuclear leucocytosis (NEU 90%, WBC 18.710 K/µl), moderate anemia, elevated CRP (306 mg/L), thrombocytosis, normal transaminases and hyperglycaemia.

Local examination revealed purulent discharge from left perianal area, edema, rubor and tenderness of gluteal, perineal and scrotal region. There was no palpable crepitus on initial examination (Figure 3).

He was started on Tazobactam, Clindamycin, Amikacin, Daptomycin.

CT revealed a fluid collection with rim enhancement with bubbles of gas on the left anal area, which presents a maximum diameter in a transverse plane of 3.5 cm. At a lower level, at the height of the external sphincter of the anus, another fluid collection is observed with dimensions in a transverse plane of 3.4 x 5.3 cm. A fluid collection with a rim enhancement and bubbles of gas is observed immediately anterior to the aforementioned one with extension anteriorly and along the length of the bulbospongiosus muscle of the penis. Most likely, the findings are attributed to abscess cavities. Fluid elements with bubbles of gas are also observed on both sides of the intergluteal cleft. Without any special findings from the examination of the pelvic organs.

The patient underwent extensive debridement immediately under general anesthesia (Figure 4). Cleaning of the ischial

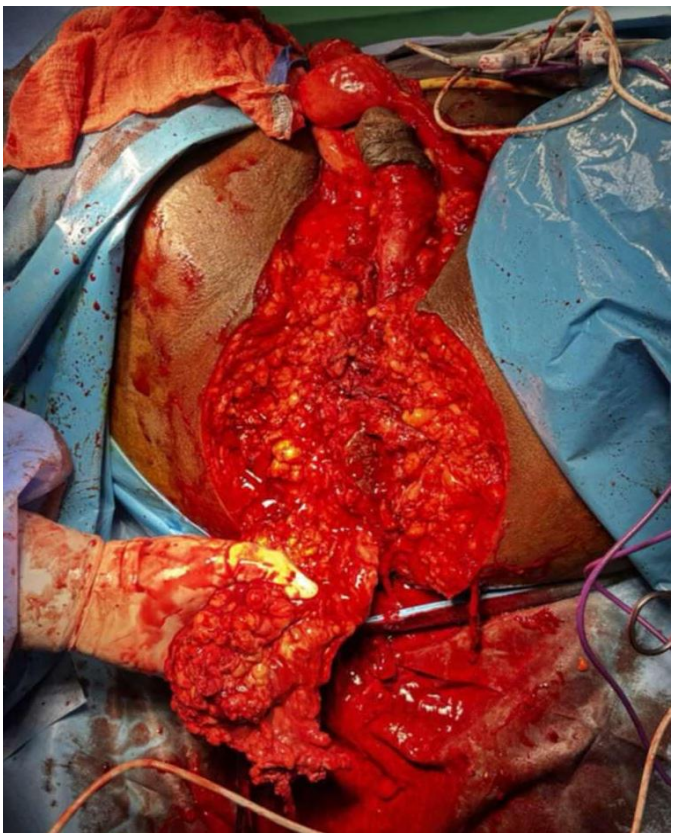

Figure 4. Intraoperative photo of extensive debridement in patient #3.

fossa up to the coccyx, anatomical preparation of the rectum and cleaning of the perineum, scrotum and the root of the penis was performed. The bulbocavernosus muscles were incised and pus was drained. Identification of the urethra in its entire length. Urethra was intact. Successful removal of the affected tissue into healthy-looking tissue margins. The anal canal was intact. Two drains in the ischiorectal fossa around the rectum were placed. The open wound was covered with gauze roll impregnated with a povidone iodine solution. Each testis was wrapped individually before a length of gauze was folded across the site. A prophylactic colostomy was performed. A dolichosigmoid was found and a sigmoid loop colostomy was created.

Operative tissue cultures were sterile. Blood cultures showed a Staphylococcus Coagulase negative (CoNS) and urinalysis spotted a fungal infection. Anidulafungin was added to systemic therapy.

He received a V.A.C.®- dressing on the 2nd postoperative day (Figure 5).

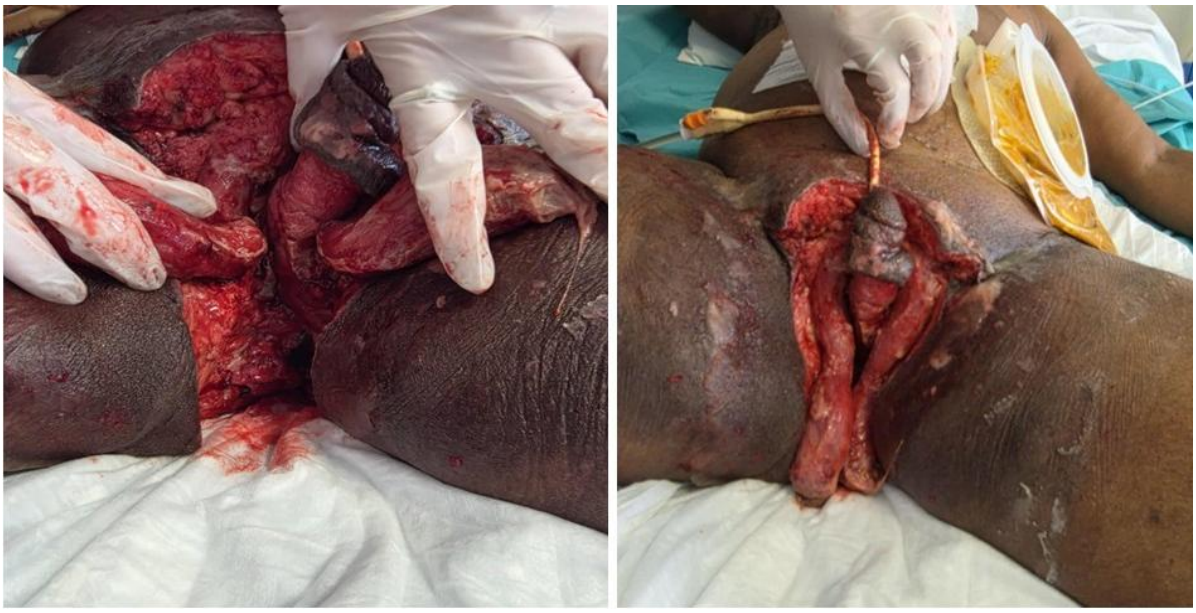

Figure 5. Progression of wound healing in patient #3 – postoperative day 2.

DISCUSSION

Aggressive surgical debridement is considered the cornerstone of treatment.In cases of delayed or insufficient surgical treatment, the mortality rates increase dramatically to 75 - 100 % (6).Once the patient's general condition stabilizes, extensive surgical debridement should be performed immediately.Simple drainage procedures are inadequate, thorough excision of all affected tissue is required. It is crucial to completely remove the necrotic tissue. The surgical team must be prepared for a major surgical intervention and the surgeon must not be afraid of creating large skin defects during debridement. The extent of tissue involvement might be greater than what is visible through external examination alone.

In severe cases, a safe surgical approach involves removing the affected perineal tissues and the anatomical preparation of the relevant structures of the sphincter muscles, potentially including part of the lower rectum. This may also entail excising the scrotum and, if needed, removing the skin of the penile shaft. Penile shaft skin is usually unaffected, so removal of the penis is rarely necessary. The extent of excision should be sufficient and should be based solely on intraoperative assessment, as the subcutaneous infection often extends beyond the zones of visible necrosis observed preoperatively. Incision should be extended until an instrument or a finger can no longer separate the skin and subcutaneous tissue from the deep fascia (4). Multiple depridements are often required. Deeper infection with myonecrosis is not typical, but it has been described (4). Any anorectal fistula should be treated with a loose Seton to facilitate wound drainage rather than fistulotomized during the acute phase (7).

The testicles are typically unaffected (even if extensive scrotal involvement is present), due to their separate blood supply from the abdominal aorta and are usually preserved and potentially, temporarily protected in a subcutaneous pouch (8). Scrotum has a different blood supply from pudendal arterial branches of the femoral artery. When testicles are necrotic, an intra-abdominal, retroperitoneal origin of infection or spread of infection must be suspected (9,10). In some cases orchiectomy is performed due to the observed severe infection in peritesticular tissues, although in the histopathological examination the testicles were not affected (4). If testicles are involved, resection at the external inguinal ring is justified. An abscess in bulbospongiosus muscles and corpus cavernosum is not common and cutting the bulbospongiosus muscles lead to a questionable mechanical support of the penis.

Urinary and/or fecal diversion (eg, suprapubic catheterization, ileostomy or colostomy) may be required depending on the source of infection. A higher percentage of patients with anorectal causes for Fournier's gangrene needed a stoma compared to those with urogenital caused (11).Preventive colostomy should be performed during the initial depridement in patients with extensive anal sphincter damage or extensive perineal debridement to protect wounds from faecal contamination (11). It is also associated with earlier oral intake and this may help the wound healing with better nutrition (4). Bowel diversion and colostomy formation could reduce the need for further debridement and shorten the time to wound healing (12). An end sigmoid ostomy is preferred over loop ileostomy, as it results in lesser rectal discharge, thereby decreasing the risk of

wound contamination. When the etiological origin is anorectal area, an indwelling urethral catheter for a few days is usually sufficient and a suprapubic catheter is generally not required unless the penis is involved in the synergistic infection and repeated debridement of that area is required (3).

Adequate source control is crucial for resolving the systemic inflammatory response and achieving hemodynamic stability. Catecholamine requirement is one of the earliest indicators of whether surgical debridement was sufficient or not. If the need for noradrenaline or other vasopressors does not decrease within the first 6 to 12 postoperative hours, it suggests that the initial surgical debridement was inadequate, necessitating further assessment and possibly additional surgical intervention.

When there is a suspicion of a necrotising infection of the perineum, empiric broadspectrum,combination antibiotic therapy, in the highest possible dosage ,should be immediately initiated, including broad coverage for gram positive, gram negative, aerobic and anaerobic bacteria until the results of tissue culture. Therapy should then be adjusted to culture results. Aerobic, anaerobic, and fungal blood, wound, tissue and urine cultures should be collected, especially in septic patients. Negative culture findings have been reported and may result from fastidious pathogens, sampling or laboratory limitations, or, less commonly, rapidly progressive/fungal infections. Importantly, the absence of microbial growth does not exclude Fournier's gangrene and should not delay initiation of empiric broad-spectrum antimicrobial therapy and urgent surgical debridement, given the condition's high mortality risk.

A typical combination of antibiotics includes a Carbapenem (imipenem/ meropenem/ertapenem) or Beta lactam-beta lactamase inhibitor (piperacillin-tazobactam or ampicillin-sulbactam), Clindamycin (activity against gram-positive organisms and anaerobes, antitoxin effects), and Vancomycin, daptomycin, or linezolid (activity against gram-positive organisms and MRSA)(8). In patients with severe hypersensitivity to carbapenems or beta lactam-beta lactamase inhibitors, Aminoglycoside or Fluoroquinolone, plus Metronidazole should be considered (13). If indicated, antifungal agents such as amphotericin B, fluconazole, or similar options may be added (13). For patients with aquatic exposure, doxycycline can be added to cover Aeromonas hydrophila and Vibrio vulnificus (13,3). A study with data from 50 patients showed that Amikacin has the highest sensitivity rate (74%) and Ampicillin-sulbactam has high resistance rates (64%) (14). The use of carbapenems (imipenem, meropenem,ertapenem) or piperaziline-tazobactam is recommended, as they have larger distribution and lesser renal toxicity in comparison to aminoglycosides (10). Antibiotic treatment is typically maintained for a minimum of two weeks (3). Tetanus immunisation is indicated for all patients with Fournier's gangrene, especially if their vaccination status is noncurrent or unknown. Fatal cases of tetanus associated with Fournier's gangrene have been documented, underscoring the importance of timely prophylaxis (15,16).

Fluid resuscitation should be initiated immediately. If needed, Vasoactive drugs should be also considered.Patients often present with electrolyte imbalances and elevated blood glucose levels, which should be

immediately corrected. In septic patients Intravenous Immunoglobulin (IVIG) appears to have positive effects like neutralizing bacterial toxins (4).

Vacuum assisted closure (VAC) is a promising, cost effective adjunct in Fournier's gangrene wound management that promotes open wound healing under a temporarily closed and controlled environment (17). VAC stimulates angiogenesis and the formation of granulation tissue, reduces tissue edema, removes exudates and reduces bacterial contamination. Fournier's gangrene wounds should not be treated with VAC immediately during initial surgical debridement. Instead, careful monitoring is required afterward to ensure the infection is under control, is no longer progressing and the patient remains stable. Once confirmed, VAC therapy can be used to aid in wound management by promoting healing, reducing discomfort from frequent dressing changes, leading to greater mobility and probably to a shorter hospital stay compared to conventional methods. Preventive Stoma is required, when using VAC on the anorectal region. The standard setting is -125 mmHg for non-bleeding, well prepared wounds, applied either continuously or intermittently (5 mins on/2 mins off), to promote granulation and fluid removal. Nevertheless, the settings of VAC should be individually adapted according to wound specifics and patient's pain tolerance and a lower or higher setting should be considered if indicated.

Early diagnosis, an aggressive surgical approach, an adequate antibiotic therapy, supportive care and wound management can improve patient survival chances.

REFERENCES

1.Tedesco S, Di Grezia M, Tropeano G, Altieri G, Brisinda G. Necrotizing soft tissue infections: a surgical narrative review. Updates Surg. 2025 Aug;77(4):1239–1251.

2. Kattan S, Youssef A. Fournier's gangrene of the scrotum following anorectal disorders. Int Urol Nephrol. 1994;26(2):215–222.

3. Leslie SW, Foreman J. Fournier gangrene. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan–. Updated 2025 Feb 15. Available from: https://www.ncbi.nlm.nih.gov/books/NBK549821/

4. Mallikarjuna MN, Vijayakumar A, Patil VS, Shivswamy BS. Fournier's gangrene: current practices. ISRN Surg. 2012;2012:942437.

5. Adli G, Kloping YP, Djatisoesanto W. Comparing scoring systems for Fournier gangrene in predicting morbidity and mortality: is FGSI still reliable? Fr J Urol. 2024 Sep;34(9):102673.

6. Kaiser RE, Cerra FB. Progressive necrotizing surgical infections: a unified approach. J Trauma. 1981;21:349–355.

7. Bakari AA, Ali N, Gadam IA, Gali BM, Tahir C, Yawe K, et al. Fistula-in-ano complicated by Fournier's gangrene: our experience in North-Eastern Nigeria. Niger J Surg. 2013 Jul;19(2):56–60.

8. Diettrich NA, Mason JH. Fournier's gangrene: a general surgery problem. World J Surg. 1983;7:288–294.

9. Chennamsetty A, Khourdaji I, Burks F, Killinger KA. Contemporary diagnosis and management of Fournier's gangrene. Ther Adv Urol. 2015 Aug;7(4):203–215.

10. Eke N. Fournier's gangrene: a review of 1726 cases. Br J Surg. 2000 Jun;87(6):718–728.

11. Ozturk E, Sonmez Y, Yilmazlar T. What are the indications for a stoma in Fournier's gangrene? Colorectal Dis. 2011 Sep;13(9):1044–1047.

12. Lawrentschuk N, Huang S, Chen D, Perera M. Role of diverting colostomy and reconstruction in managing Fournier's gangrene: a narrative review. BJU Int. 2024;134(4):534–540.

13. Auerbach J, Bornstein K, Ramzy M, Cabrera J, Montrief T, Long B. Fournier gangrene in the emergency department: diagnostic dilemmas, treatments and current perspectives. Open Access Emerg Med. 2020 Nov 9;12:353–364.

14. Yilmazlar T, Gulcu B, Isik O, Ozturk E. Microbiological aspects of Fournier's gangrene. Int J Surg. 2017 Apr;40:135–138.

15. Yong I. Gangrene: the prognostic factors and validation of severity index in Fournier's gangrene. In: Gangrene – Current Concepts and Management Options [Internet]. InTech; 2011. Available from: http://dx.doi.org/10.5772/24542

16. Lawal I. Tetanus following Fournier's gangrene: case report and literature review. Ann Niger Med. 2006;1(2):22–24.

17. Ozturk E, Ozguc H, Yilmazlar T. The use of vacuum-assisted closure therapy in the management of Fournier's gangrene. Am J Surg. 2009 May;197(5):660–665.

18. Gürdal M, Yücebas E, Tekin A, Beysel M, Aslan R, Sengör F. Predisposing factors and treatment outcome in Fournier's gangrene: analysis of 28 cases. Urol Int. 2003;70(4):286–290.

ΠΑΡΟΥΣΙΑΣΗ ΠΕΡΙΣΤΑΤΙΚΟΥ

Νεκρωτικές λοιμώξεις μαλακών μορίων του περινέου: Μια σύντομη σειρά περιστατικών και ανασκόπηση της βιβλιογραφίας

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ΠΕΡΙΛΗΨΗ

Οι νεκρωτικές λοιμώξεις του περινέου, κοινώς γνωστές ως γάγγραινα Fournier, αντιπροσωπεύουν μια ταχέως εξελισσόμενη και απειλητική για τη ζωή κατάσταση που απαιτεί άμεση διάγνωση και παρέμβαση. Παρουσιάζουμε τρεις ενδιαφέρουσες περιπτώσεις νεκρωτικών λοιμώξεων του περινέου που αντιμετωπίστηκαν με επιτυχία μέσω επιθετικού χειρουργικού καθαρισμού σε συνδυασμό με αντιμικροβιακή θεραπεία ευρέως φάσματος και VAC . Τονίζεται η σημασία της έγκαιρης αναγνώρισης και της επείγουσας χειρουργικής παρέμβασης για την αναστολή της εξέλιξης της νόσου, την πρόληψη της συστηματικής σήψης και τη βελτίωση της επιβίωσης. Οι περιπτώσεις μας υπογραμμίζουν τον κρίσιμο ρόλο του εκτεταμένου καθαρισμού για την απομάκρυνση όλου του νεκρωτικού ιστού, ακολουθουμενο από την κατάλληλη φροντίδα του τραύματος. Η έγκαιρη και αποφασιστική χειρουργική αντιμετώπιση εξακολουθεί να αποτελεί τον πιο κρίσιμο παράγοντα για την έκβαση του ασθενούς στις νεκρωτικές λοιμώξεις του περινέου, υπογραμμίζοντας τη σημασία της στη μείωση της νοσηρότητας και της θνησιμότητας που σχετίζονται με αυτή την επιθετική παθολογία.

Λέξεις ευρετηρίου: Νεκρωτικές λοιμώξεις περινέου, Γάγγραινα Fournier, Χειρουργικός καθαρισμός

Α. Ρόκα, Π. Γρίβας, Α. Τάτα, Β. Μπούμης, Β. Νικολάου, Ε. Μπαρκολιάς, Γ. Μεϊμάρης. Νεκρωτικές λοιμώξεις μαλακών μορίων του περινέου: Μια σύντομη σειρά περιστατικών και ανασκόπηση της βιβλιογραφίας. Επιστημονικά Χρονικά 2025; 30(2): 321-331

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